

Universidade Lusófona

CANDIDATURAS(s) a Bolsa(s) de Iniciação Científica, HEI-Lab/ULHT

(BIC_VeraocomCiencia_2022)

Encontra-se aberto o concurso para a atribuição de quatro (4) Bolsas de Iniciação Científica para a Escola de Verão HEI-Lab, a decorrer entre os dias 1 e 30 de setembro de 2022. O concurso decorre no âmbito do Programa “**Verão Com Ciência**”, promovido pela FCT, com o objetivo de estimular a iniciação à atividade científica, estabelecendo as seguintes condições:

Requisitos de admissão:

Os/As estudantes que reúnam as condições para ser bolseiros de iniciação investigação(artº 5º e 6º do [Regulamento de bolsas da FCT](#)).

Plano de trabalhos

A investigação no HEI-Lab's é dedicada ao estudo das inter-relações entre o comportamento humano e o ambiente, e visa integrar conhecimento e métodos de múltiplos campos em psicologia, computação afectiva e inteligência artificial. Os quatro projectos propostos serão acompanhados por uma equipa interdisciplinar de peritos nestes campos.

1- *Welcome day*;

2- *Workshops (W) and MasterClasses (M)*:

1ª semana

M1: “eMental Health: Past, Present and Future”. HEI-Lab Director Pedro Gamito

W1: “Systematic Literature Reviews” Carla Sousa & Micaela Fonseca

W2: “Physiological Measurement: planning, recording and inference”. Pedro Rosa & Jorge Oliveira

2ª semana

M2: Game AI Creators”. Phil Lopes

W3: Disentangling Games, Play, Game Design. Pedro Neves

3ª semana

M3: Empathy as a means to design experience. Andreia Pinto de Sousa

W4: “Motion Capture: Studying Human Movement” Filipe Luz

4ª semana

Conferência Final

Organização conjunta de uma conferência final em colaboração com (CICANT e CeIED) intitulada "Capacitar os estudantes através de competências transversais de investigação".

NOTA: Ver anexo para descrição detalhada de cada projeto.

Legislação e regulamentação aplicável: Estatuto do Bolseiro de Investigação Científica, na redação dada pelo Decreto-Lei n.º 123/2019, de 28 de agosto; Regulamento n.º 950/2019, de 29 de novembro, publicado em Diário da República n.º 241, 2.ª Série, de 16 de dezembro (<https://dre.pt/application/file/a/127230968>) (Regulamento de Bolsas de Investigação da FCT, I.P.);

Regulamento n.º 643/2021, de 30 de junho, publicado em Diário da República n.º 135, 2.ª Série, de 14 de julho ([167281061 \(dre.pt\)](https://dre.pt)); Decreto-Lei n.º 66/2018, de 16 de agosto (Regime jurídico de reconhecimento de graus académicos e diplomas de ensino superior atribuídos por instituições de ensino superior estrangeiras)

Local de exercício da atividade: As atividades relacionadas com a bolsa serão desenvolvidas no HEI-Lab - Universidade Lusófona de Humanidades e Tecnologias (ULHT).

Duração da(s) bolsa(s): A bolsa terá a duração de 1 mês com início previsto a 1 de setembro de 2022.

Valor do subsídio de manutenção mensal: O montante da bolsa corresponde a 486,12 euros conforme tabela de valores das bolsas atribuídas diretamente pela FCT, I.P. no País (<http://alfa.fct.mctes.pt/apoios/bolsas/valores>). A bolsa será paga por transferência bancária.

O desempenho de funções a título de bolseiro é efetuado em regime de dedicação exclusiva, ao abrigo do Art.º 5.º do Estatuto do Bolseiro de Investigação Científica.

Métodos de seleção:

A seleção dos/as candidatos/as será efetuada por um júri constituído pelo Doutora Micaela Fonseca (Presidente), Doutora Ana Rita Farias (1.º Vogal) e Doutor Phil Lopes (2.º Vogal), Doutor Pedro Gamito e Doutor Jorge Oliveira (membros do júri- suplentes) com base na avaliação curricular, carta de motivação e curriculum vitae que corresponderá respetivamente a 70%, 20% e 10% da avaliação dos/as candidatos/as.

Forma de publicitação/notificação dos resultados:

Os resultados finais da avaliação serão publicitados através de projeto de lista ordenada, afixada em local visível e público do HEI-Lab e publicada na página eletrónica do HEI-Lab.

Os candidatos podem reclamar no prazo de 5 dias úteis contados da afixação/publicitação da lista de classificação final.

O/a candidato/a aprovado/a será notificado/a através de correio eletrónico.

Prazo de candidatura e forma de apresentação das candidaturas:

O concurso encontra-se aberto no período de **13/7/2022 a 26/07/2022**.

As candidaturas devem ser formalizadas, obrigatoriamente, acompanhadas dos seguintes documentos:

- Certificado de habilitações;
- Carta de motivação
- Curriculum Vitae;
- Outros certificados de formação relevantes (se aplicável);
- Comprovativo de inscrição num ciclo de estudos.

As candidaturas deverão ser remetidas por correio eletrónico, com a indicação no assunto do e-mail da referência do concurso (BIC_VeraocomCiencia_2022_nºdo projeto), para o seguinte endereço:

ana.mourato@ulusofona.pt

Anexo

01 PROJECT: Embodied mu rhythm activity during observation of simple hand movements in virtual reality

Mu rhythm is a brain wave that is associated with resting of motor neurons, assessed using electroencephalography. Literature has shown that this activity is suppressed either by motor action or observation, suggesting that the Mu rhythm is a marker of the human mirror neuron system (MNS). The mirror neurons are important neurons for observational learning and imitating the actions of others, which is an important asset during cognitive development. Research suggests that Mu rhythm suppression is influenced by the social context where the individuals are involved. More specifically, studies show that lower social class individuals show greater MNS activation, which may enable greater coordination, cooperation and stronger social ties. Importantly, empirical studies on intergroup relations have also shown that Mu rhythm suppression is reduced with increasing prejudice, with important consequences on the responsiveness towards outgroup members and on intergroup helping behaviors.

Therefore, this proposal aims to create a virtual reality scene to study Mu suppression during motor action and observation in first-person perspective, manipulating social-class of the self to study how perceived social class may influence Mu suppression. Within the field of social cognition, we intend to study whether Mu suppression relates to the visual appearance of the avatar and embodiment perception. Moreover, we intend to study if there is a moderating effect of prejudice on this effect.

GOALS:

1. Create an avatar with a realistic hand and another with a homeless person hand;
2. Create a virtual reality scene to study motor action and observation with the avatar.

TASKS

1. Requirements for the VR scene;
2. Development of the VR scene with the avatar;
3. Pilot testing for feasibility in a small sample;

Supervisors:

Jorge Oliveira: 2115-358A-C70D

Leonor Costa: 4D1C-725A-936B

02 PROJECT: BlindGame: exploring online gambling activities among young people

The Internet is transforming multiple industries and one of those is the gambling industry. The online gambling market is growing in many places due to factors such as advancements in technology, increased trust among gamblers paying online, and global digitization.

Due to the high level of accessibility, immersive interface and ease at which money can be spent, concerns have been expressed. Gambling is not a typical pastime, it is risk-based and harmful to one's health and negative consequences are numerous. Thus, a more comprehensive understanding of

young people's problem gambling is critical, and even more so, because new forms of gambling are known to be very seductive for this population, as is the case of gambling activities linked to eSports.

BlindGame project aims to map online gambling activities among Portuguese young people and explore possible antecedents and consequences across intra- generational, regional and social-demographic dimensions.

GOALS

The main goal of the BlindGame project is to map young people's access to online gambling, favourite forms of online gambling, prevalence, and their relationships with socio-demographic and economic characteristics.

TASKS

1. Literature review;
2. Select relevant measures;
3. Questionnaire programming.

Supervisors:

Ana Rita Farias: 5718-46AC-401B

Ana Cristina Antunes: 2D13-2F76-689F

03 PROJECT: Virtual Reality Project: Exploring Interaction and Movement and its Impact on Emotional Intensity.

Affective Computing is a field of research investigating the development of computational systems with the capability of recognizing and processing human emotion for the personalization and benefit of individual users. VR provides users with a new perspective and interactive tools for the exploration of virtual environments. This can lead to a wider range of emotional experiences given that such interactions can often mimic “real-world” movements at a higher fidelity than ever before.

The main concept of this project is to both develop a VR game, with the intent of exploring how a specific in-game action can influence the player's affective state (i.e., anxiety). Given that anxiety (and stress) is one of the easiest emotions to measure, the thematic of the game will revolve around horror. Thus, a game scenario will need to be developed where a specific core interaction will be necessary. The scenario must allow this interaction to be accomplished in several different methods and must be able to synchronize and record specific physiological signals: Electrocardiogram (ECG) and Electrodermal Activity (EDA) with the core game. Finally, a small user study is necessary to understand how these different methods impact player emotions.

Goals:

- Implement a very simple horror theme VR Scenario;
- Work with physiological devices such as ECG and EDA.
- Process Physiological Signals using Python Libraries.

TASKS

1. Literature review;
2. Design a Simple Level with Horror Themes using Unity 3D Assets and Integrate Sensors (ECG and EDA) in the game;
3. Pilot Study;
4. Data collection and analysis;

Supervisors:

Phil Lopes: 8018-E267-2165

Micaela Fonseca: 961A-1B84-DB7F

04 PROJECT: Virtual Reality Project: Exploring the Effects of Challenge Over Player's Emotions Through Physiological Multimodality and Performance Features

Dynamic Difficulty Adjustment (DDA), provides automatic adaptation of real-time challenges based on players' emotions. VR games offer an ideal medium for emotion elicitation, as players tend to report intense emotional responses along with a heightened sense of presence. Thus, our work aims to further contribute to the field of affective gaming, by exploring physiological multimodality and performance to characterize player experiences, when exposed to different levels of challenge in a VR game.

We propose the development of a gesture-based VR game, based on the Trail Making Test, as this standard test allows us to evaluate the effects of physical and mental challenge. The game will be divided into 3 levels of difficulty (easy, medium, and hard). During the game tasks, Electrocardiogram, Electrodermal Activity, Respiratory Activity, and performance will be recorded, which will require synchronization between the recordings and the game. Players will also report their emotions using questionnaires, as to establish ground-truth. Finally, a user study will be conducted to assess the impact of the various levels of challenge on players' emotions.

GOALS:

The goals of the present work are related to the major purpose of proposing an automatic system for emotion recognition and dynamic difficulty adjustment in VR, namely:

- Design of a VR videogame and protocol for emotion elicitation;
- Collect three physiological signals during gameplay;
- Implement a signal processing workflow using Python Libraries.

TASKS

1. Literature review;
2. Implement 3 distinct VR experimental conditions in respect to the three levels of difficulty;
3. Carry-out a pilot study to collect data;
4. Data Processing and Analysis.

Supervisors:

Micaela Fonseca: 961A-1B84-DB7F

Phil Lopes: 8018-E267-2165

